1. (Currently amended) A working control device comprising:

a configuration characteristic extraction unit obtaining configuration information about characteristics of a three-dimensional configuration from design data of an object workpiece;

a working case storage unit storing working conditions, as a working case, of ~~the~~ a working of a prior formed object workpiece conducted in the past;

a case searching unit searching out the working case from the working case storage unit on the basis of the configuration information;

a working condition setting unit determining the working conditions based on the working case searched out by the case searching unit; and

a control unit controlling a working machine on the basis of the working conditions.

2. (Original) A working control device according to Claim 1, further comprising:

a judgment criterion storage unit stored with information serving as a judgment criterion for the working conditions,

wherein the working condition setting unit determines the working conditions based on the information of the judgment criterion storage unit and on the working case searched out by the case searching unit.

3. (Original) A working control device according to Claim 1, further comprising:

a pre-working input unit accepting an input of information about the object workpiece,

wherein the working condition setting unit determines the working conditions based on the information given from the pre-working input unit and on the design data.

4. (Original) A working control device according to Claim 1, further comprising:

a monitoring unit obtaining information of the working machine when the control unit controls based on the working conditions; and

a working case registration unit having the working case storage unit stored with the working machine information obtained by the monitoring unit in a way that makes it as a working case mapping to the configuration information.

5. (Original) A working control device according to Claim 1, further comprising:

a monitoring unit obtaining information of the working machine when the control unit controls based on the working conditions;

a working case registration unit having the working case storage unit stored with the working machine information obtained by the monitoring unit in a way that makes it as a working case mapping to the configuration information; and

a post-working input unit accepting an input of information about whether the working is preferable or not,

wherein the working case registration unit has the working case storage unit stored with the working case, corresponding to the information accepted by the post-working input unit.

6. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit divides a surface of the object workpiece represented by the design data into polygons, obtains coordinates of vertexes of these polygons as X-, Y- and Z-values in the case of being expressed by values in X-, Y- and Z-direction, obtains minimum and maximum X-values, minimum and maximum Y-values and minimum and maximum Z-values among all the vertexes, obtains a maximum X-axis directional length by subtracting the minimum X-value from the maximum X-value, obtains a maximum Y-axis directional length by subtracting the minimum Y-value from the maximum Y-value, and obtains a maximum Z-axis directional length by subtracting the minimum Z-value from the maximum Z-value.

7. (Original) A working control device according to Claim 6, wherein the configuration characteristic extraction unit projects all the polygons onto an X-Y plane on which a lowermost part of the object workpiece is positioned, obtains a volume of a polygon pole created by connecting respectively the vertexes of each polygon to corresponding vertexes of the polygon projected onto the X-Y plane, obtains a volume of the object workpiece by repeating this calculation with respect to all the polygons, and obtains a removal volume by subtracting this

from a volume obtained by multiplying the maximum X-axis directional length, the maximum Y-axis directional length and the maximum Z-axis directional length.

8. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit judges whether a normal line of the polygon is parallel with a working axis or not, and classifies the polygon exhibiting the parallelism according to a value in the Z-axis direction.

9. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit extracts concave shape parts of the object workpiece represented by the design data, and obtains a concave shape radius dimension having a minimum radius in the concave shape parts.

10. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit extracts concave shape parts of the object workpiece represented by the design data, classifies the concave shape parts according to a radius dimension, obtains an areal size of the concave shape part according to this radius dimension, and obtains a radius dimension having a maximum areal size.

11. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit divides a surface of the object workpiece represented by the design

data into polygons, compares, in the case of representing the coordinates of the vertexes of these polygons in values in the X- Y- and Z-directions, Z-axis values of the vertexes of the polygons excluding the polygons having fitting surfaces to the working machine and the polygons abutting on these fitting surfaces, and obtains a minimum Z-axis value as a maximum depth of the object workpiece.

12. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit divides a surface of the object workpiece represented by the design data into polygons, judges whether or not a normal line of the polygon is parallel with the working axis, classifies the polygons into the polygons exhibiting the parallelism and the polygons exhibiting no parallelism, obtains a working range by grouping the polygons including shared edges with respect to each classification, and obtains the edges, as a working range boundary line, which are not shared with other polygons in each group.

13. (Original) A working control device according to Claim 1, wherein the configuration characteristic extraction unit obtains blank dimensions by adding a working margin in the working case searched out by the case searching unit to the maximum X-axis directional length, the maximum Y-axis directional length and the maximum Z-axis directional length.

14. (Original) A working control device according to Claim 1, further comprising:

a monitoring unit obtaining information of the working machine when the control unit performs the control based on the working conditions;

a post-working input unit accepting an input of information about whether a result of the working is preferable or not when performing the control; and

a working case registration unit having the working case storage unit stored with the working machine information obtained by the monitoring unit and information about whether a result of the working is preferable or not in a way that makes it as a working case mapping to the configuration information,

wherein in case the result of the working in the working case searched out by the case searching unit is preferable, the working condition setting unit determines the working conditions based on the working case.

15. (Original) A working control device according to Claim 1, wherein the case searching unit searches the working case database by using the configuration information obtained from the configuration characteristic extraction unit as a search key, and thus searches out a working case mapping to the configuration information falling within a predetermined range.

16. (Original) A working control device according to Claim 1, wherein the working machine is a cutting machine,

the monitoring unit measures a main shaft load state of the working machine, and

the control unit, in case the measured main shaft load is out of a predetermined range, adjusts a feeding speed of the cutting machine so as to fall within the predetermined range.

17. (Original) A working control device according to Claim 1, wherein the working machine is a cutting machine,

the monitoring unit measures a main shaft load state of the working machine, and

the control unit, in case the measured main shaft load is out of a predetermined range, adjusts a the number of revolutions of the main shaft of the cutting machine so as to fall within the predetermined range.

18. (Original) A working control device according to Claim 1, wherein in the case of using a plurality of tools, the working condition setting unit compares a cutting residual quantity of the tool to be used ahead with an allowable range of the tool to be used next, and, if the cutting residual quantity of the tool to be used ahead exceeds the allowable range of the next tool, sets so that the cutting residual quantity of the tool to be used head falls within the allowable range of the next tool by changing, adding or deleting the tool.

19. (Original) A working control device according to Claim 1, wherein in the case of using a plurality of tools, the working condition setting unit compares a cutting residual quantity of the tool to be used ahead with an allowable range of the tool to be used next, adds a tool used between the tool to be used ahead and the tool to be used next if the cutting residual quantity of

the tool to be used ahead is over an upper limit of the allowable range of the next tool, compares the cutting residual quantity of the tool to be used ahead with the allowable range of the tool to be used next if the cutting residual quantity of the tool to be used ahead is under a lower limit of the allowable range of the next tool, and deletes the tool to be used next if the cutting residual quantity of the tool to be used ahead is within the allowable range of the tool to be used next.

20. (Currently amended) A computer readable medium comprising a working control program for making a computer execute steps of:

obtaining configuration information about characteristics of a three-dimensional configuration from design data of an object workpiece;

searching out a working case on the basis of the configuration information from a working case storage unit storing working conditions, as a working case, of ~~the~~ a working of a prior formed object workpiece conducted in the past;

determining the working conditions based on the working case; and

controlling a working machine on the basis of the working conditions.

21. (Currently amended) A working control system comprising a working machine and a working control device for controlling the working machine,

the working control device including:

a configuration characteristic extraction unit obtaining configuration information about characteristics of a three-dimensional configuration from design data of an object workpiece;

a working case storage unit storing working conditions, as a working case, of ~~the~~ a working of a prior formed object workpiece conducted in the past;

a case searching unit searching out the working case from the working case storage unit on the basis of the configuration information;

a working condition setting unit determining the working conditions based on the working case searched out by the case searching unit; and

a control unit controlling a working machine on the basis of the working conditions.

22. (Original) A working control device according to Claim 1, further comprising a judgment criterion storage unit having a tool library stored with information of usable tools,

wherein the working condition setting unit determines a minimum tool diameter necessary for the cutting/working on the basis of the design data and the usable tool information, determines a target time T of the cutting/working on the basis of the working case searched out by the case searching unit, adds the tools in sequence from the tool having the minimum tool diameter, calculates a time Tn in the case of effecting the cutting/working with the tools inclusive of an n-th tool, repeats a process of calculating the time Tn by adding the tools till the time Tn

becomes shorter than the target time T, and determines the using tool from among the n-pieces of tools at a point of time when the time Tn becomes shorter than the target time.

23. (Original) A working control device according to Claim 1, further comprising a judgment criterion storage unit having a tool library stored with information of usable tools,

wherein the working condition setting unit determines a minimum tool diameter necessary for the cutting/working on the basis of the design data and the usable tool information, adds the tools in sequence from the tool having the minimum tool diameter, calculates a time Tn in the case of effecting the cutting/working with the tools inclusive of an n-th tool, repeats a process of calculating the time Tn by adding the tools till the time Tn becomes shorter by a predetermined value than a time Tn-1 in the case of effecting the cutting/working with the tool inclusive of an (n-1)th tool, and determines the using tool from among the (n-1)-pieces of tools at a point of time when the time Tn does not become shorter by the predetermined value than the time Tn-1.

24. (Previously presented) A tool determining method for a working control device comprising the steps of:

obtaining configuration information about characteristics of a three-dimensional configuration from design data of an object workpiece utilizing a configuration characteristic extraction unit,

storing in a judgment criterion storage unit a tool library with information of usable tools,

storing working conditions, as a working case, of the working conducted in the past in a working case storage unit,

searching out the working case from the working case storage unit on the basis of the configuration information utilizing a case searching unit,

determining the working conditions based on the working case searched out by the case searching unit utilizing a working condition setting unit,

controlling a working machine on the basis of the working conditions utilizing a control unit,

the working condition setting unit executing steps of:

determining a minimum tool diameter necessary for the cutting/working on the basis of the design data and the usable tool information;

determining a target time T of the cutting/working on the basis of the working case searched out by the case searching unit;

adding the tools in sequence from the tool having the minimum tool diameter and calculating a time Tn in the case of effecting the cutting/working with the tools inclusive of an n-th tool;

comparing the time Tn with the target time T and repeating a step of calculating the time Tn by adding the tools till the time Tn becomes shorter than the target time T; and

determining the using tool from among the n-pieces of tools at a point of time when the time Tn becomes shorter than the target time.

25. (Previously presented) A tool determining method for a working control device comprising the steps of:

obtaining configuration information about characteristics of a three-dimensional configuration from design data of an object workpiece utilizing a configuration characteristic extraction unit,

storing in a judgment criterion storage unit a tool library with information of usable tools,

storing working conditions, as a working case, of the working conducted in the past in a working case storage unit,

searching out the working case from the working case storage unit on the basis of the configuration information utilizing a case searching unit,

determining the working conditions based on the working case searched out by the case searching unit utilizing a working condition setting unit,

controlling a working machine on the basis of the working conditions utilizing a control unit,

the working condition setting unit executing:

a step of determines a minimum tool diameter necessary for the cutting/working on the basis of the design data and the usable tool information;

a step of adding the tools in sequence from the tool having the minimum tool diameter and calculating a time Tn in the case of effecting the cutting/working with the tools inclusive of an n-th tool;

a step of comparing a time Tn-1 in the case of effecting the cutting/working with the tools inclusive of an(n-1)th tool with the time Tn, and repeating a process of calculating the time Tn by adding the tools in case the time TN becomes shorter by a predetermined value or above than the time Tn-1; and

a step of determining the using tool from among the (n-1)-pieces of tools at a point of time when the time Tn does not become shorter by the predetermined value or above than the time Tn-1.

26. (Previously presented) A tool determining program on a computer readable medium comprising the program steps of:

obtaining configuration information about characteristics of a three-dimensional configuration from design data of an object workpiece utilizing a configuration characteristic extraction unit,

storing in a judgment criterion storage unit a tool library with information of usable tools,

storing working conditions, as a working case, of the working conducted in the past in a working case storage unit,

searching out the working case from the working case storage unit on the basis of the configuration information utilizing a case searching unit,

determining the working conditions based on the working case searched out by the case searching unit utilizing a working condition setting unit,

and controlling a working machine on the basis of the working conditions utilizing a control unit by executing steps of:

determining a minimum tool diameter necessary for the cutting/working on the basis of the design data and the usable tool information;

determining a target time T of the cutting/working on the basis of the working case searched out by the case searching unit;

adding the tools in sequence from the tool having the minimum tool diameter and calculating a time Tn in the case of effecting the cutting/working with the tools inclusive of an n-th tool;

comparing the time Tn with the target time T and repeating a step* of calculating the time Tn by adding the tools till the time Tn becomes shorter than the target time T; and

determining the using tool from among the n-pieces of tools at a point of time when the time Tn becomes shorter than the target time.